PANEL: Challenges for Multimedia/Multimodal Research in the Next Decade

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Invited Panelists

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1. PANEL SUMMARY

The multimedia and multimodal community is witnessing an explosive transformation in the recent years with major societal impact. With the unprecedented deployment of multimedia devices and systems, multimedia research is critical to our abilities and prospects in advancing state-of-the-art technologies and solving real-world challenges facing the society and the nation. To respond to these challenges and further advance the frontiers of the field of multimedia, this panel will discuss the challenges and visions that may guide future research in the next ten years.

CCS Concepts/ACM Classifiers

• Information systems~Multimedia information systems • Information systems~Multimedia and multimodal retrieval

KEYWORDS

Multimedia research; long-term outlook; future challenges and opportunities.

2. Background

A small group of top researchers convened in 2017 for an NSF Workshop on Multimedia Challenges, Opportunities and Research Roadmaps. The group reviewed and identified research areas in the MM field that were deemed the most important over the next decade. For each identified topic, a summary was produced to describe the main findings, including the state of the art, challenges, and research roadmaps planned for the next 5, 10, and 15 years, with a final comprehensive report [1]. More recently, a shorter report [2] was written to summarize key challenges for the future of multimodal and multimedia research.

These 9 cross-cutting challenges which will provide an initial starting point for the panel discussions:

- **Multimodal Theory, Fusion, Representation and Alignment.**
- **Personalization.**
- **Knowledge Discovery and Reasoning.**
- **Transparency & Explicability, Interpretation and Visualization.**
- **Creation of High-quality Relevant Multimodal Datasets.**
- **Scalable Learning and Infrastructure.**
- **Data Privacy.**
- **Validity, Authenticity and Authoritativeness**

3. Panel Members

Alex Hauptmann (Panel Chair), Carnegie Mellon University.

Alex Hauptmann is a Research the Language Technologies Institute of the School of Computer Science at CMU. His research has led him to pursue and combine several different areas: man-

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machine communication, natural language processing, speech understanding and synthesis, video analysis and machine learning. He worked on speech and machine translation from 1984-94, before he joined the Informedia project for digital video analysis and retrieval and led the development of numerous multimedia analysis and retrieval applications.

Alberto Del Bimbo (Panelist), Università di Firenze.

Alberto del Bimbo is Full Professor at the Department of Information Engineering of University of Firenze, and Director of MICC–Media Integration and Communication Center. He is also the Director of NEMECH the New Media for Cultural Heritage Center. He is the author of over 350 scietific papers in Computer Vision and Multimedia. Prof. Del Bimbo is IAPR Fellow and the recipient of the 2016 ACM SIGMM Award for Outstanding Technical Contributions to Multimedia Computing, Communications and Applications .

Cathal Gurrin (Panelist), Dublin City University.

Dr Cathal Gurrin (@cathal) is an Associate Professor at the School of Computing, at Dublin City University, assistant head of the School of Computing with responsibility for Research and Engagement, and a principal co-investigator at the Insight Centre for Data Analytics. Gurrin leads a group dedicated to developing assistive technologies using wearable sensors and data analytics. The interdisciplinary "lifelogging" approach, integrates computer science, cognitive science and data-driven healthcare analytics to generate next-generation digital records of the individual. He is the founder and co-organiser of the Lifelog Search Challenge at ICMR, the NTCIR-Lifelog participation workshop and the ImageCLEF lifelog task.

Hayley Hung (Panelist), Delft University of Technology.

Hayley Hung is an Associate Professor at Delft University of Technology, The Netherlands. She leads the Socially Perceptive Computing Lab. Her research is in social signal processing, multi-sensor processing, machine learning, and ubiquitous computing. Her research focuses on devising novel pattern recognition and machine learning methods to automatically interpret group social and affective behavior during face-to-face human interactions. In 2015, she was awarded the prestigious Dutch Research Foundation (NWO) Career Talent Award for experienced researchers (Vidi). Her research contributions have also been recognized via an invited talk at the ACM Multimedia 2016 Rising Star Session. In 2014 she led the proposal of a new area in ACM Multimedia on Emotional and Social Signals which has been running ever since.

Heng Ji (Panelist), University of Illinois Urbana-Champaign.

Heng Ji is a professor at Computer Science Department of University of Illinois at Urbana-Champaign. Her research interests focus on Natural Language Processing, especially on incorporating deep language analysis into multimedia knowledge extraction. Her recent work, based on collaborations with Prof. Shih-Fu Chang at Columbia, focuses on extracting, linking, and summarized complex events from multimedia, multilingual sources. We develop a novel framework to extract the multimedia entities involved in these complex events and assign them certain roles, and ground them in one coherent common structured semantic space.

Alan Smeaton (Panelist), Dublin City University

Check conference program for updates.

ACKNOWLEDGMENTS

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REFERENCES

[1] Shih-Fu Chang. et. al 2019. Report of 2017 NSF Workshop on Multimedia Challenges, Opportunities and Research Roadmaps. arXiv e-prints arXiv:1908.02308.

[2] Shih-Fu Chang, Alex Hauptmann, and Louis-Philippe Morency. 2019. Key Challenges for Multimedia Research in the Next Ten Years. Technical Report. National Science Foundation,, USA.